AUDIOACCESS®

MA-362

Twelve Channel Amplfier

Hardware Installation

9/2002, rev 1.0

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NOTE: Due to continuous product improvement, the information in this manual is subject to change without notice.

Unpacking and Inspection

Use caution when unpacking the MA-362 and follow these procedures:

◇ Inspect the shipping carton(s) for exterior damage before opening them. If any damage is discovered, notify your freight agent and Audioaccess immediately.

◇ To open the shipping box, cut the tape and carefully remove the staples.

NOTE: Save the carton and all packing material in case it becomes necessary to ship the equipment for repair.

◇ Inspect the MA-362 Twelve Channel Amplifier for signs of damage.

Typographical Conventions

Please note the following typographical conventions used throughout this manual.

◇ Warnings that relate to user safety are highlighted in **BOLD** print.

◇ First and second level subsection titles are located in the left margin of each page. Third level titles are located within the body text and are in ***bold italic*** print.

◇ The pointing hand symbol emphasizes important information within a subsection or paragraph.

◇ The lightbulb symbol emphasizes tips within a subsection or paragraph.

◇ Special notes and comments appear in *italics.* Important terms within a paragraph appear in *italics.*

Technical Services

Authorized dealers may obtain answers to questions not covered in this Installation Manual by contacting the technical services department:

Audioaccess
250 Crossways Park Drive, Woodbury, NY 11797

Business hours: 9am to 5pm Eastern

Toll Free Audioaccess Service Line: (888) 691-4171 (USA Only)

Fax Tech Services: (516)682-3528
Email Address: websupport5@harman.com

Custom Installation Dealers in the USA may also access technical support via the web at:
www.support.audioaccess.com

If you are in the field when you call and reach the answering machine, press "0" and then ask the operator to page technical services.

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Section 1

MA-362 Product Description

Description

Overview

The Audioaccess MA-362 Twelve Channel Amplifier represents a high-end, high-value approach to amplifier design while providing twelve channels of quality amplification for multi-room system applications.

Power to Spare

With a power rating of 50 Watts per channel at 8 Ohms from 20Hz to 20kHz with less than .05% THD, the MA-362 will drive virtually any appropriate loudspeaker to room filling volume. Power into 4 Ohms is 75 Watts per channel and bridged operation provides an impressive 150 Watts per channel into 8 Ohms. Cool operation is ensured with a design incorporating heat sinks, flow through ventilation and low-noise fans.

After a series of careful evaluations and tests, Audioaccess has chosen to implement a conservative and proven design philosophy with the MA-362 with the added benefit of improved sound quality and long component life. Power for each channel is delivered by a pair of high current output transistors capable of delivering over 200 watts, much higher power than the rated 50 watts per channel.

The output transistors for each channel can handle 12 amps of current. At rated power, the MA-362 draws 2.5 amps of current, ensuring ample safe operating area headroom and reliable performance.

Zone Muting Control

Each pair of channels is controlled by a three position Trigger Source switch to select signal sensing, voltage trigger or trigger link (to the trigger source of the zone to the immediate left) in order to activate any of the 6 amplifier zones.

Unique Input Bussing

A two position Signal Link switch is also provided for each zone. This allows assignment of direct input to the zone, or to share the source utilized by the zone to its left, eliminating the need for Y-cords to distribute common inputs to multiple zones.

Installation Flexibility

Ease of installation, a hallmark of all Audioaccess products is maintained in the new MA-362. An external speaker termination board allows advance termination of loudspeakers. At final installation, simply plug the speaker termination board onto the rear panel of the amplifier.

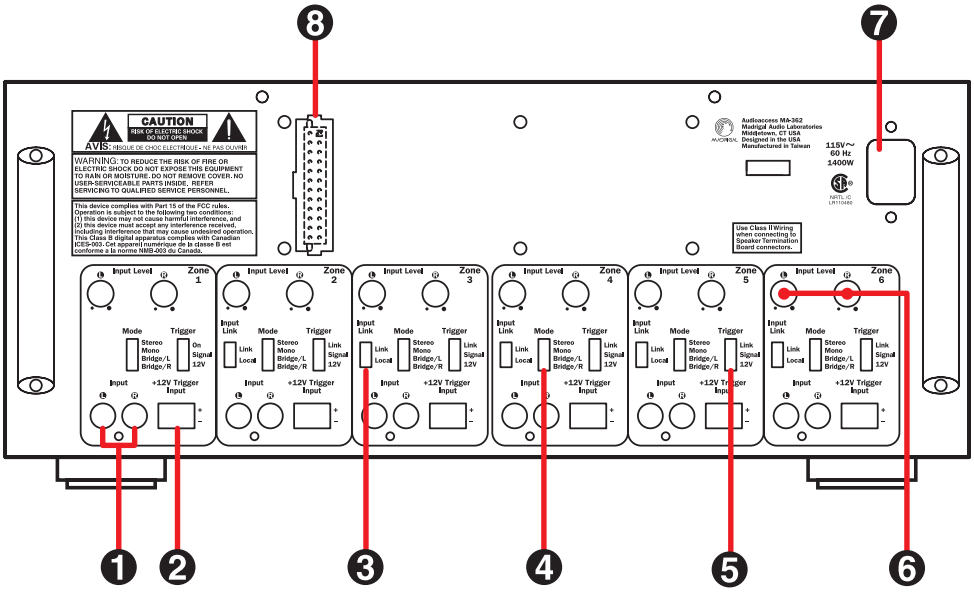
Summary

The MA-362 features, performance and reliability make it the perfect amplifier choice for a wide variety of multi-room audio system applications.

Features

- ◇ Rack mountable chassis
- ◇ Discrete amplifier design for improved sound quality.
- ◇ Signal Input Connectors: six dual RCA jacks.
- ◇ Four position switch to select Stereo, Bridged Right, Bridged Left, or mono operation for each zone.
- ◇ Independent level controls for each amp channel.
- ◇ Signal Link Selector: two position switch to link a zone to the signal input connector of the zone to its left (zone 1 cannot link to another Zone Source)
- ◇ Trigger Source Selector: three position switch to select signal sensing, voltage trigger input or link (to the trigger signal of the zone to the immediate left) to control muting in the zone.
- ◇ Trigger Input, euro-style connector, accepts 3 to 24V AC or DC, to “unmute” amp channels in the zone.
- ◇ Plug-in Speaker Termination Board, TI-501, a snap for advance installations.
- ◇ Power Switch on Front panel Bi-color LED Power Indicator

Rear Panel



❶ AUDIO INPUTS
Six stereo RCA connectors (one pair per zone).

❷ VOLTAGE TRIGGERS
2-position, screw terminal Euro-Style connector
(one voltage trigger per zone.)

❸ INPUT LINK SELECTOR
Switch to set channel to be local or linked to previous zone output on zones 2 through 6.

❹ OUTPUT MODE SELECTOR
Switch to set channels between **STEREO**, **MONO**, **BRIDGED LEFT** or **BRIDGED RIGHT**.

❺ TRIGGER SOURCE SELECTOR
The trigger switch has three settings:

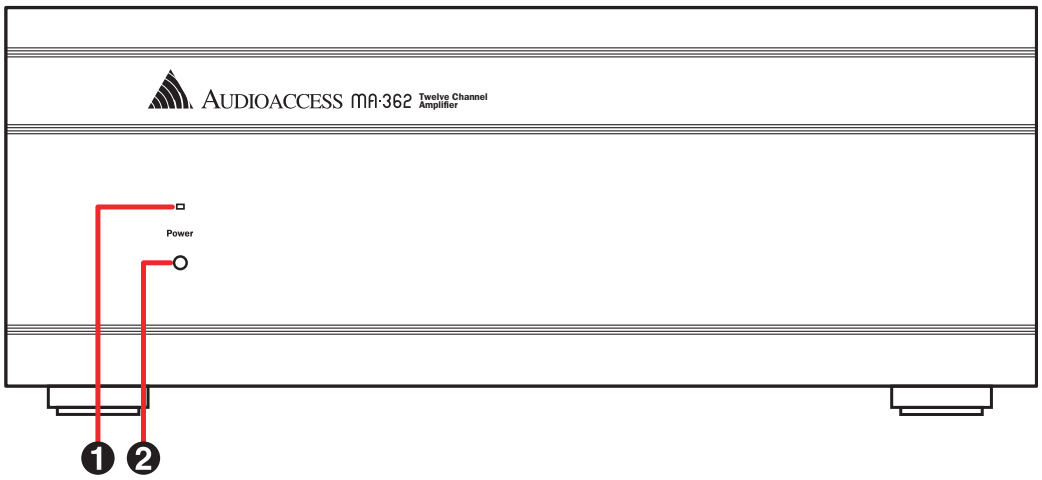
LINK	Turn on when previous channel is activated (not available on ZONE 1)
SIGNAL	Turn on when signal is received at channels input
12V	Turn on when signal is received at channels inputs

❻ INPUT LEVEL ADJUSTMENT
Control pot to adjust input level of channels (one left and one right per zone).

❼ AC POWER
IEC 3-pin power inlet connector. Ensure that the voltage marked on the rear panel of the unit matches the AC mains voltage supplied at the wall outlet.

❽ SPEAKER CONNECTOR
24-pin connector for the TI-501 Speaker Termination Board (TI-501) or optional TI-503 with 48″ cable.

Front Panel



❶ LED
The tri-color LED on the front panel indicates the state the MA-362 is in.

RED	Standby
GREEN	1 or more channels are active
FLASHING RED	Thermal Protect
YELLOW	1 or more channels has become inoperative

❷ AC POWER SWITCH *(Push button switch)*
When the switch is depressed (in) power is supplied to the MA-362. When the switch is out, the unit is off.

Section 2

Design Considerations & Physical Installation

Design Considerations

To maintain proper operation of the MA-362 amplifier the following items should be considered when designing a system using the MA-362. Following these guidelines will ensure proper operation within the installation.

Heat

The MA-362 will generate some heat during normal operation. Amplifiers should have at least 3″ of space on top and 2″ on each side of the amplifier for proper cooling. The amplifier includes two internal cooling fans that will turn on when the temperature of the heatsinks reach 80˚C (thermal protection at 90˚C). For installations within a closed environment, a fan should be used within the cabinet installation to remove heat from the installation space. Proper ventilation will reduce the need for the internal fans to turn on, resulting in quiet operation.

DO NOT STACK MA-362 AMPLIFIERS DIRECTLY ON TOP OF EACH OTHER OR ON OTHER EQUIPMENT.

Installation

The MA-362 fits standard rack mount shelves and occupies five rack spaces including a shelf. Keep this and the above heat requirements in mind when determining size of rack to be used within the installation.

Trigger Settings

The MA-362 channels can be configured for a variety of sources. Each zone (**L** and **R** channel) of the amp can be triggered **ON** in three different ways as listed below. The factory setting is for signal sensing.

The trigger switch has three settings:

LINK Turn on when previous channel is activated (not available on ZONE 1)
SIGNAL Turn on when signal is received at channels input
12V Turn on when signal is received a channels inputs

Channel Output

The MA-362 channels can be configured in different ways to allow for use in various installation applications. In most cases the channels would be run in stereo, but should the need arise, the MA-362 can be configured for MONO output to work in an area where the speakers are spread apart, or the channels can be bridged for more power output. Before installation verify all amplifier channel requirements.

Speakers

Some installations may require more than one pair of speakers on a zone. Each MA-362 channel can drive a minimum of 4 ohms impedance (two 8Ω speakers in parallel). Keep this mind when determining the number of speakers needed for a zone. *See Appendix A for speaker connection diagrams.*

NOTE: A "zone" refers to a pair of amplifier channels.

Physical Installation

The installation of the MA-362 will vary based on the system design. Before beginning the installation, have all aspects of the system design on hand to verify that all needed connections are made.

Connection – Quick Start

The factory defaults for the MA-362 are as follows:

Input Signal	**LOCAL**
Output Mode	**STEREO**
Trigger	**SIGNAL**

Based on these settings the MA-362 can be set up quickly for basic operation as a 12-channel amplifier.

- Connect the zone input on the MA-362 to the appropriate Primary zone output of the PX-700, or other suitable preamplifier output.
- Connect the TI-501 outputs to the appropriate speakers in the installation. Optional: when using the TI-503, connect one end of the 48″ cable to the MA-362 and the other end to the STB (Speaker Termination Board).
- Verify zone settings based on the CHANNEL CONFIGURATION section which follows.

NOTE: For more advanced setup and use of the MA-362, follow the guidelines described in the CHANNEL CONFIGURATION section which follows.

Section 3

Channel Configuration

Each channel of the MA-362 can be configured for different signal feeds, turn on source and output. Read through the following information before configuring the amplifier.

Input Signal

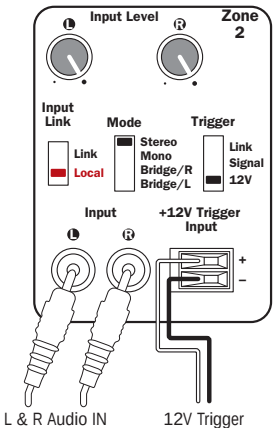
MODE	DESCRIPTION	SWITCH SETTING
Local	Channel is fed directly from the inputs for that Zone.	
Link	Channel is fed from a previous input to the left of that Zone.	

NOTE: This switch is available on zone 2 through 6. Zone 1 is configured to be **LOCAL** *only.*

Local Inputs

1. Connect the left and right input signals to the Left and Right RCA jacks of a MA-362 Zone.
2. Set Input Link switch to **LOCAL**.
3. Set **MODE** to appropriate setting based on *"Output Mode"* as described sarting on page 3.4 in this section.
4. Set **TRIGGER** to appropriate trigger type as described in *"Trigger Source"* starting on page 3.8 in this section.
5. Connect speaker leads to the Zone's **LEFT** and **RIGHT** speaker outputs. (See Appendix A for speaker connection diagrams.)

LOCAL INPUT OPERATION

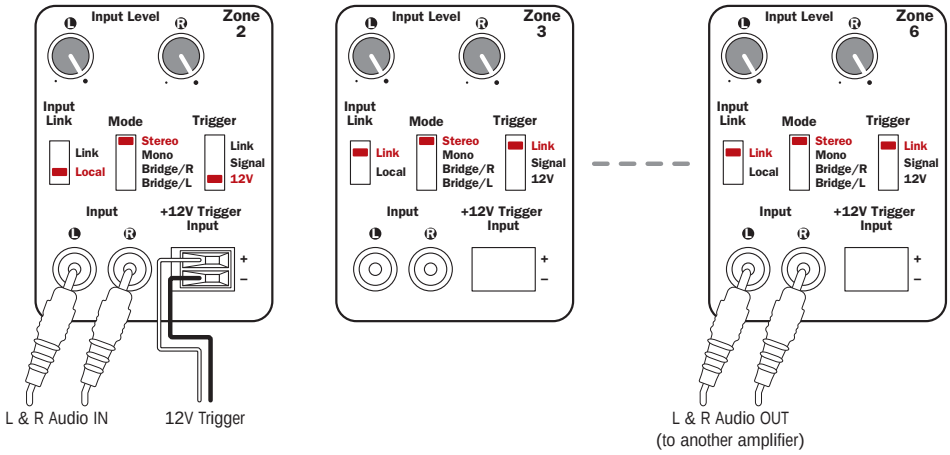


Linked Inputs (Bussing)

Multiple zones can be bussed together. The RCA jacks on one Zone are used to supply signal to the zone(s) to its immediate right. The unused RCA jacks on any linked zone may be used as a buss output to connect to another MA-362 or other amplifier.

1. Connect the left and right input signals to the **LEFT** and **RIGHT** RCA jacks of a MA-362 Zone.
2. Set **INPUT LINK** switch to **LOCAL**.
3. Set Mode to **STEREO**.
4. On the zone to the immediate right, set **INPUT LINK** to **LINK**.
5. Set **MODE** to **STEREO**.
6. Set **TRIGGER** to appropriate trigger type as described in *"Trigger Source"* starting on page 3.8 in this section.
7. For each additional zone in the same buss group, set **INPUT LINK** to **LINK**, **MODE** to **STEREO** and **TRIGGER** to **LINK**.
8. Connect speaker leads to the Zone's **LEFT** and **RIGHT** speaker outputs. (See Appendix A for speaker connection diagrams.)

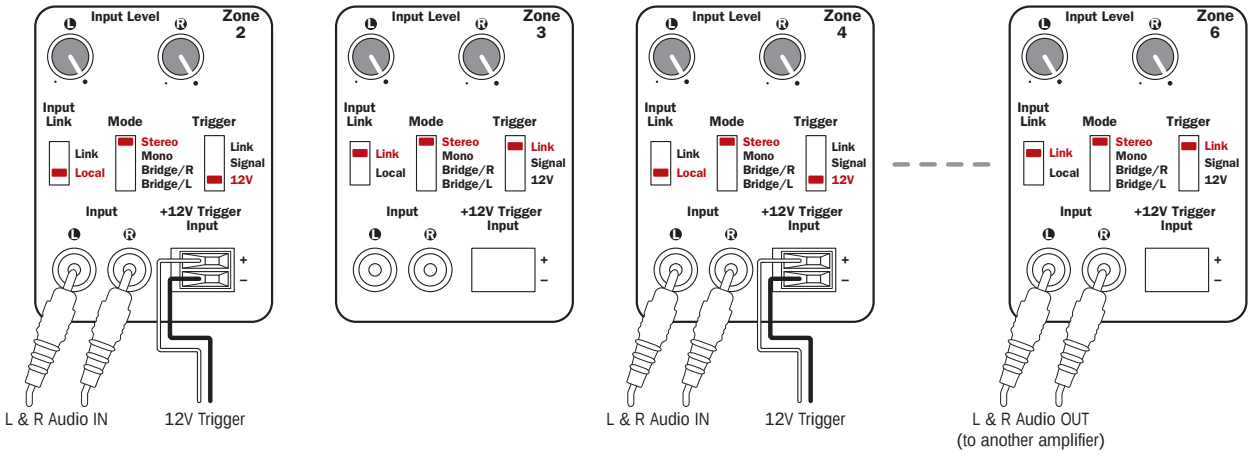
INPUT LINK OPERATION - BUSSING (Stereo Mode)



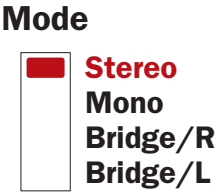
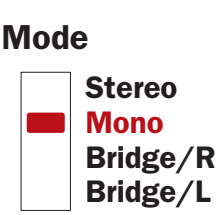
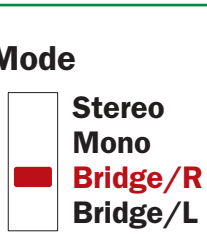
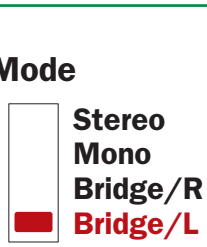
Multiple Linked Inputs (Bussing)

Multiple busses (groups of linked zones) can be created. Follow the steps described above in *"Linked Inputs (Bussing)"* and simply make sure the **INPUT LINK** switch of the first zone of each buss group is set to **LOCAL**. Connect the audio signals for the bussed group to the **LEFT** and **RIGHT** RCA jacks of this first zone.

MULTIPLE INPUT LINK OPERATION - BUSSING (Stereo Mode)



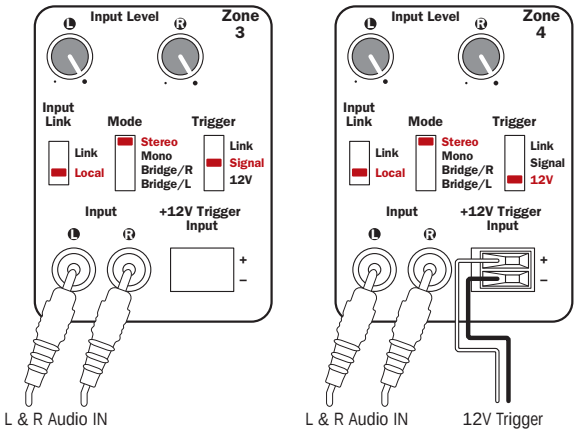
Output Mode

MODE	DESCRIPTION	SWITCH SETTING
Stereo	Channel outputs signal independently to left and right speaker	
Mono	Left and Right signal is summed and output is the same at the left and right speaker. NOTE: When sources are stereo, both the left and right input must be used. The output of the summed will be 3dB less than the stereo mode.	
Bridged Right	The left and right positive outputs are used for one speaker feed by the right input.	
Bridged Left	The left and right positive outputs are used for one speaker feed by the left input.	

Stereo Operation

1. Connect the left and right input signals to the left and right RCA jacks of a MA-362 Zone.
2. Set **INPUT LINK** to **LOCAL** (Note: Zone 1 always uses the local input).
3. Set **MODE** to **STEREO**.
4. Set **TRIGGER** to appropriate trigger type as described in *"Trigger Source"* starting on page 3.8 in this section.
5. Connect speaker leads to the Zone's **LEFT** and **RIGHT** speaker outputs. (See Appendix A for speaker connection diagrams.)
6. Starting with the controls at maximum (full clockwise rotation), adjust left or right **INPUT LEVEL** controls as needed to balance the sound output from each speaker.

STEREO OPERATION

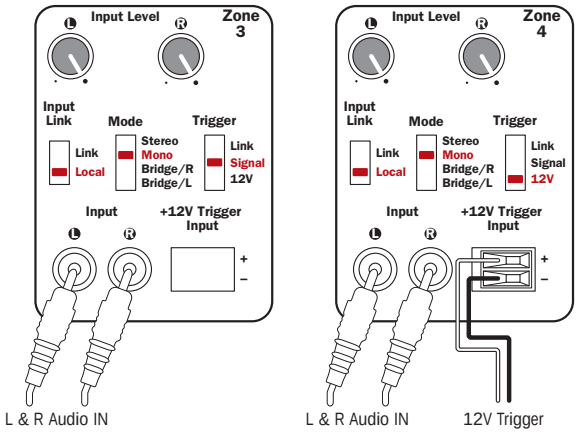


Signal Sensing — 12 Volt Trigger

Mono Operation

1. Connect the left and right input signals to the left and right RCA jacks of a MA-362 Zone.
2. Set **INPUT LINK** to **LOCAL** (Note: Zone 1 always uses the local input).
3. Set **MODE** to **MONO**.
4. Set **TRIGGER** to appropriate trigger type as described in *"Trigger Source"* starting on page 3.8 in this section.
5. Connect speaker leads to the Zone's **LEFT** and **RIGHT** speaker outputs. (See Appendix A for speaker connection diagrams.)
6. Starting with the controls at maximum (full clockwise rotation), adjust left or right **INPUT LEVEL** controls as needed to balance the sound output from each speaker.

SUMMED TO MONO OPERATION



Signal Sensing — 12 Volt Trigger

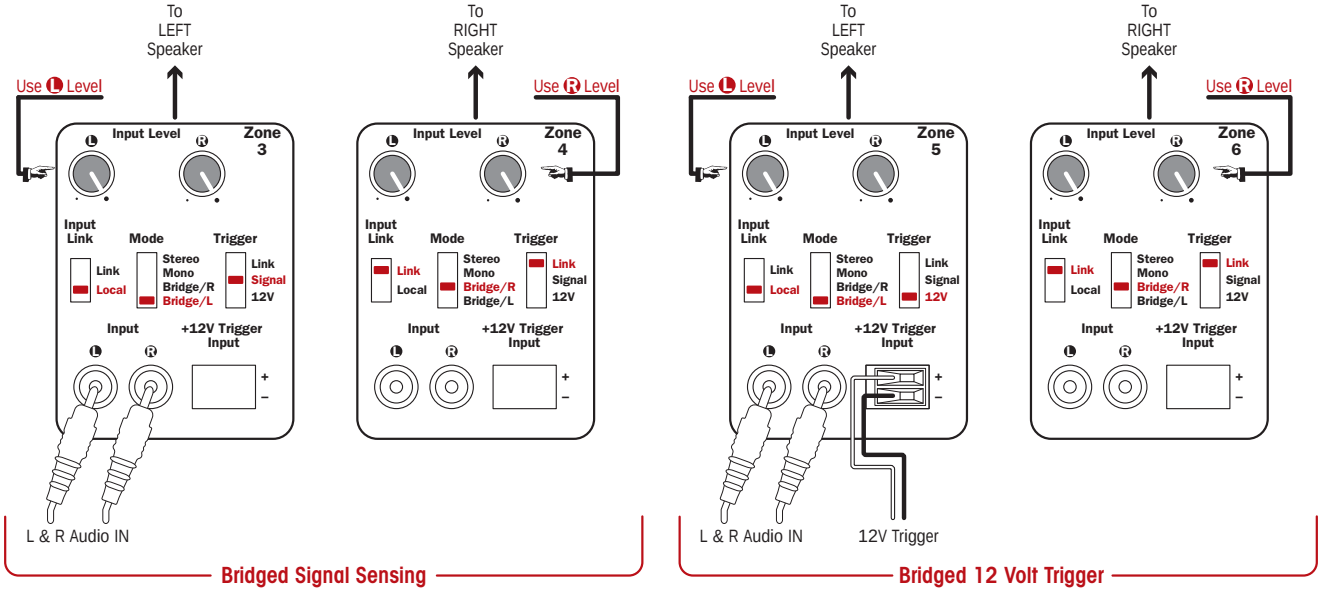
Bridged Operation

Method One

You *must* use Method One if you are bussing zones.

1. Connect the left and right input signals to the Left and Right RCA jacks of an MA-362 Zone.
2. Set **INPUT LINK** to **LOCAL**.
3. Set **MODE** to **BRIDGE/L**.
4. Set **TRIGGER** to appropriate trigger type as described in *"Trigger Source"* starting on page 3.8 in this section.
5. Connect left speaker leads to the Zone's **RIGHT +** (**+** speaker lead) and **LEFT +** (**–** speaker lead) **SPEAKER OUTPUTS**.
6. On the zone to the immediate right, set **INPUT LINK** to **LINK**.
7. Set **MODE** to **BRIDGE/R**.
8. Set **TRIGGER** to **LINK**.
9. Connect right speaker leads to the Zone's **RIGHT +** (**+** speaker lead) and **LEFT +** (**–** speaker lead) **SPEAKER OUTPUTS**. (See Appendix A for speaker connection diagrams.)
10. Starting with the controls at maximum (full clockwise rotation), adjust left **INPUT LEVEL** control on the first zone and right **INPUT LEVEL** control on the second zone as needed to balance the sound output from each speaker.

BRIDGED OPERATION (Method One)

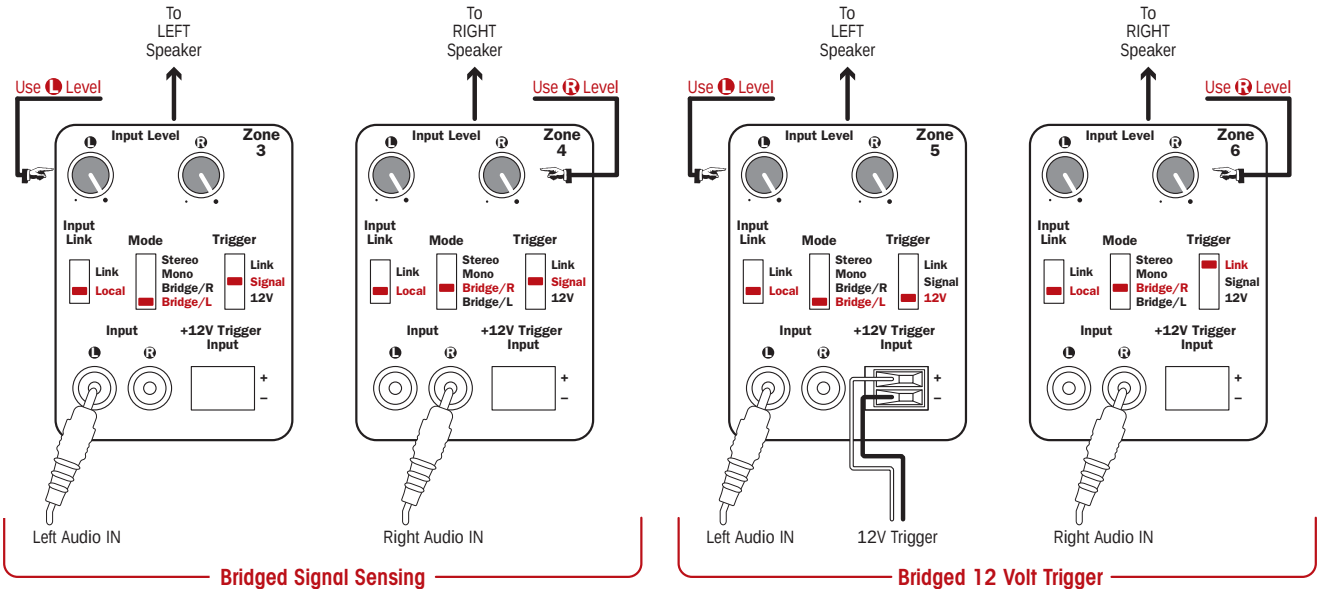


Bridged Operation

Method Two

1. Connect the left input signal to the Left RCA jack of a MA-362 Zone.
2. Set **INPUT LINK** to **LOCAL**.
3. Set **MODE** to **BRIDGE/L**.
4. Set **TRIGGER** to appropriate trigger type as described in *"Triggering"* starting on page 3.8 in this section.
5. Connect left speaker leads to the Zone's **RIGHT +** (**+** speaker lead) and **LEFT +** (**–** speaker lead) **SPEAKER OUTPUTS**.
6. On the zone to the immediate right, connect the right input signal to the Right RCA jack.
7. Set **INPUT LINK** to **LOCAL**.
8. Set **MODE** to **BRIDGE/R**.
9. If the trigger in the first zone is set to signal sensing, set **TRIGGER** to **SIGNAL**. Otherwise, set **TRIGGER** to **LINK**.
10. Connect right speaker leads to the Zones **RIGHT +** (**+** speaker lead) and **LEFT +** (**–** speaker lead) **SPEAKER OUTPUTS**. (See Appendix A for speaker connection diagrams.)
11. Starting with the controls at maximum (full clockwise rotation), adjust left **INPUT LEVEL** control on the first zone and right Input Level control on the second zone as needed to balance the sound output from each speaker.

BRIDGED OPERATION (Method Two)

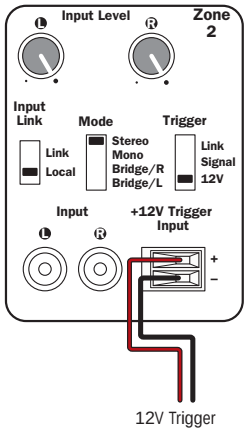


Trigger Source

12V Trigger

1. Connect RCA jacks and set the **INPUT SIGNAL** switch to appropriate setting based on *"Input Signal"* as described starting on page 3.1 in this section.
2. Set the **OUTPUT MODE** switch and connect speakers appropriately based on *"Output Mode"* as described starting on page 3.4 in this section.
3. Connect **POSITIVE +** lead from trigger source to the **POSITIVE + TRIGGER INPUT** for the zone
4. Connect **NEGATIVE -** lead from trigger source to the **NEGATIVE - TRIGGER INPUT** for the zone
5. Connect the speaker appropriately based on *"Output Mode"* as described starting on page 3.4 in this section.

12v Trigger Connection



Link Trigger

This trigger setting (on Zone 2 through Zone 6) uses the previous zones trigger type to turn the zone on, no connection to the trigger input is required.

On Zone 1, there is an **ON** setting rather than a **LINK** setting. This trigger is activated when the main power is switched on from the front panel. Other zones, beginning with Zone 2 can be linked to Zone 1

Signal

This trigger setting uses the signal at the RCA inputs to turn the zone on, no connection to the trigger input is required.

Section 4

Troubleshooting

SYMPTOM	CHECK	POSSIBLE CAUSE	
No Audio	Front Panel LED	**LED**	**STATE**
		OFF	NO POWER — Reseat power cord on MA-362 rear panel and in outlet. Check internal fuse.
		RED	STANDBY — Verify trigger settings. SIGNAL SENSING — Check audio input connections. Verify signal output level. Signal sensing turn on requires at least 3.5mVrms of signal to turn on. VOLTAGE TRIGGER — Check trigger wiring and verify that trigger source has output. SERIAL PORT — Verify serial port connections.
		GREEN	One or more channels are active — refer to RED state above.
		FLASHING RED	THERMAL PROTECT — Unit is in protect mode. Remove the AC power to the MA-362 and check all wiring for shorts.
		YELLOW	One or more channels has become inoperative — contact Audioaccess Technical Services.
	Wiring	Verify all wiring connections for that channel.	
	Line voltage (brown out)	Line voltage may have fallen below 10% of nominal voltage. The unit should return to normal operation once power is restored to the operational level.	
Voltage Trigger(s) do not turn amp channel(s) on	Polarity of voltage trigger wires	Reversed polarity of tip wire between the trigger voltage supply and the trigger receiver is not accepted by MA-362 internal controls.	

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Section 5

Technical Specifications

Specifications

Note: Due to constant research, specifications are subject to change without notice.

Electrical

Number of Channels	12, configured as 6 left/right pairs (zones)
Power Output (Unbridged)	50W @ 8Ω, 75W @4Ω, 20 – 20k Hz, All Channels Driven
Power Output (Bridged)	150W @ 8Ω, 20 – 20k Hz, All Channels Driven
THD + Noise	<0.05% at rated power, 20 – 20k Hz
IMD	<0.05% (SMPTE)
Frequency Response	20 – 20k Hz, +0/-0.2dB at rated power, 4Ω load
Bandwidth	5 – 75k Hz, +0, -3dB, at rated power, 4Ω load
Signal to Noise Ratio	>100dB unweighted (ref: Rated Power), unbridged into 8Ω
Crosstalk	>-70dB (ref: Maximum Output) between any two channels (no audible crosstalk)
Protection	Short Circuit, Over Current, DC, Thermal
Muting	Turn on, Turn off, signal Sensing, and Triggered per zone
Input Impedance	24kΩ
Input Sensitivity	1.0Vrms (with input trim at minimum attenuation)
Input Level Trim Range	20dB
Gain	26dB

Dimensions and Weight

Height	7.5" (190mm) (including feet)
Width Front Panel	19" (483mm)
Width Chassis	17" (450mm)
Depth	17" (450mm)
Weight	60 lbs (27.2kg) (without carton)

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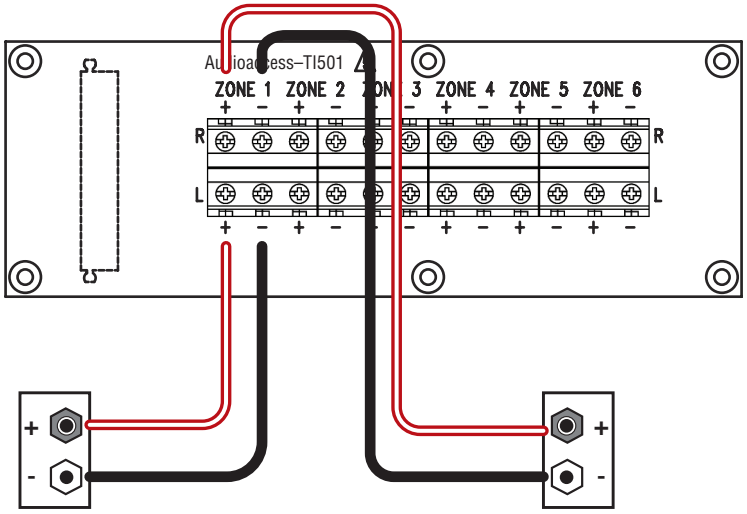
Appendix A

Speaker Wiring

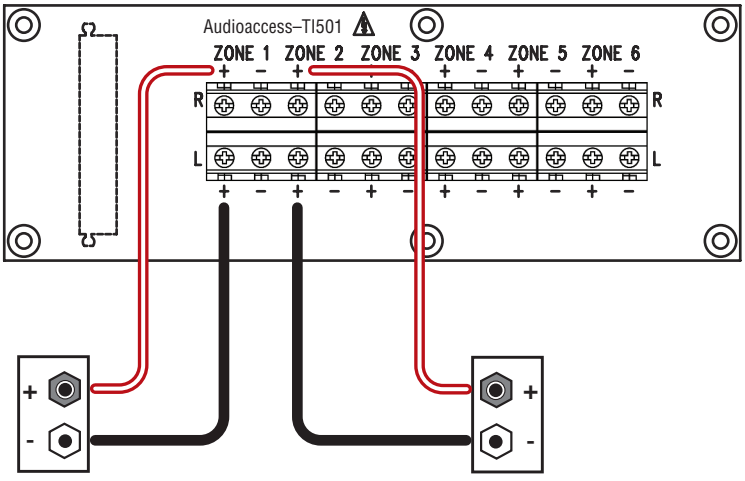
Stereo / Mono Speaker Connection



Left Speaker Terminal

Right Speaker Terminal

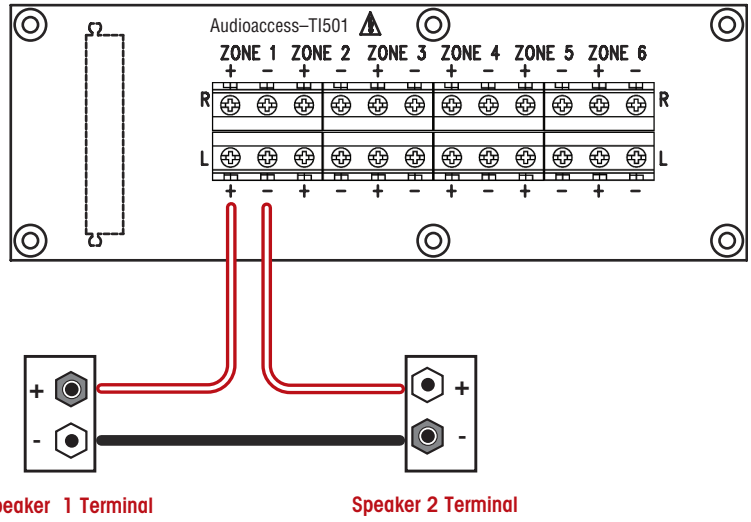
Bridged Speaker Connection



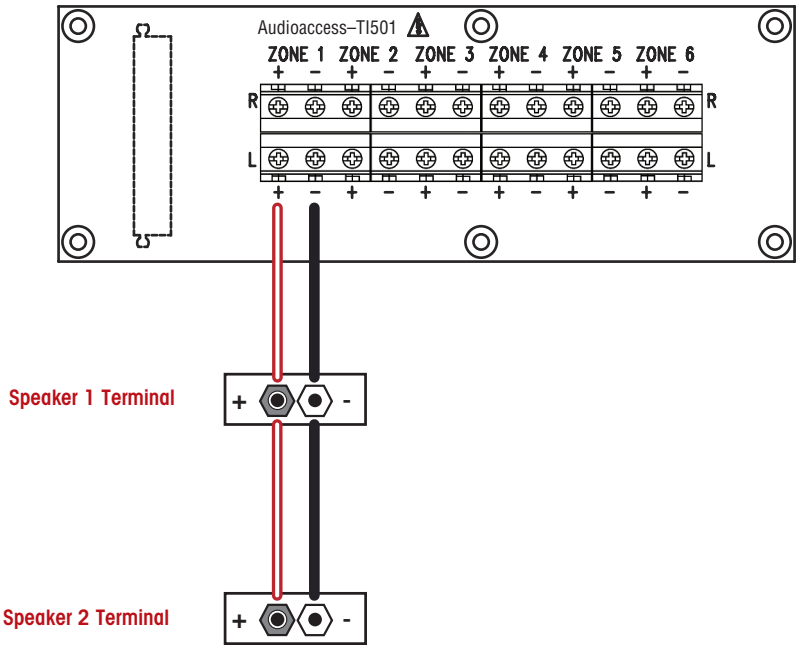
Left Speaker Terminal

Right Speaker Terminal

Series Speaker Connection



Parallel Speaker Connection



LIMITED WARRANTY

(Applicable within United States and Canada)

AUDIOACCESS® warrants to the original purchaser, this product to be free from defective materials and workmanship when used in accordance with its printed instructions for a period of one (1) year in normal home use, from date of purchase. AUDIOACCESS agrees to remedy any such defect or to furnish a new part in exchange for any defective part of the unit, free of charge for parts and labor, provided unit is delivered intact by the owner or his representative to AUDIOACCESS (prepaid) via our authorized dealer from whom purchased, with proof of purchase, for our examination.

If service is required:

1. Present your AUDIOACCESS unit to the authorized dealer, from whom purchase was made.
2. If no authorized dealer is available in your area, contact AUDIOACCESS (address below) for authorization to return your unit for service to AUDIOACCESS. (No returns will be accepted by AUDIOACCESS without prior Return Authorization. Such Authorization will be evidenced by a Return Authorization Number.)
3. AUDIOACCESS is not responsible for shipping damage. If you do not have original packing, please inquire when requesting the Return Authorization. (A nominal charge will be made for new packaging.)
4. All shipments must be sent to AUDIOACCESS prepaid and insured. AUDIOACCESS will pay return shipping charges (based on UPS surface) if repairs are covered by the warranty.

This warranty is limited to the AUDIOACCESS product(s) registered herein and specifically excludes consequential damage to loudspeakers or other associated equipment which may result, for any reason, from use with this product.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring, abuse, or use in violation of operating instructions furnished by AUDIOACCESS, nor does it extend to any units altered or repaired by anyone other than AUDIOACCESS or our authorized service agencies. Removal or alteration of the serial number may make it impossible to provide service under the warranty. The warranty set forth above is in lieu of all other warranties, expressed or implied, of merchantability, fitness for purpose or otherwise.

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